The full report: "Southern Resident Killer Whales: Ten Years of Research and Conservation," is available at:

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# Southern Resident Killer Whales: 10 Years of Research & Conservation

## **Report Summary**

Published trio of papers on how Southern Requested public input on potential Completed 5-year Status Review; no Residents modify their behavior in presence vessel regulations. change to status needed. of vessels. Formed scientific team to study Southern Published paper showing high levels of Announced new vessel regulations to Co-hosted Southern Resident killer whale Resident risk factors and data gaps. toxics in Southern Residents, raising protect killer whales. Naturalist Workshop with The Whale concerns about health, especially for Museum for whale-watch operators and Hosted first science workshops to identify iuveniles with highest levels of PBDEs. Published scientific paper showing naturalists to learn about U.S. and Canadian research needs on prey relationships and T Southern Resident killer whale distinct management efforts and research results. reproductive success appears to increase vessel interactions. population segment listed as endangered Completed first stock identification of with male age and size and that Southern Longest Southern Resident Residents do not breed outside of their satellite tag deployment to date under ESA. Southern Resident prey, shedding light on Proposed new vessel regulations to protect Southern Residents are declared "depleted importance of salmon in whale diet. small population. (>3 months) provided information killer whales. under the Marine Mammal Protection Act. on winter habitat use and allowed First paper from Southern Resident killer First of three NOAA-DFO Bilateral Scientific researchers to collect the most Center for Biological Diversity and others whale program characterizing diving First fecal samples collected from Southern Added killer whale response plan to the Court orders NOAA to reconsider eligibility of petition agency to list Southern Residents behavior of Southern Residents in the resident killer whales to identify stress Northwest Area Contingency Plan for oil spill Workshops to Evaluate Effects of Salmon offshore prey samples in one Southern Residents for ESA listing. under the ESA hormones, genetic identify, and diet. Fisheries on Southern Residents. research cruise. summer range. response. 2002 2004 2006 2008 2010 2012 2001 2003 2005 2009 2013 2007 2011 - Determined Southern Residents ineligible for Completed first killer whale winter distribu-Co-hosted a symposium with the Completed final Southern Resident L Published two papers, one on the Deployed first satellite tag on a Southern tion survey cruise (PODS) and confirmed protection under the ESA. Department of Fisheries and Oceans Recovery Plan. identification of species and stocks of Resident (adult male J26) to determine coastal habitat use by L pod. Canada to share new research results. prey consumed and one on prey winter distribution. consumption requirements by Southern Completed Southern Resident Status Review. Washington Department of Fish and Wildlife Collected first contemporary biopsy Residents, providing much needed Second and third NOAA-DFO Bilateral completes Washington State Status Report sample from a Southern Resident to information on Southern Resident Scientific Workshops to Evaluate Effects of for Southern Residents. quantify contaminant loads, infer diet Salmon Fisheries on Southern Residents. predator/prey relationships. preferences, and collect DNA. Hosted additional science workshops about behavioral data collection and identification Proposed potential areas for Southern of Southern Resident subspecies. Resident critical habitat. Washington State designates killer whales in Completed Southern Resident Research Washington State as endangered.

Designated final Southern Resident

critical habitat in inland Washington

waters.

Photos: NWFSC/NOAA Fisheries

Milestones in NOAA's Efforts to Recover

**Southern Resident Killer Whales** 

Collected first fecal sample from a Southern

Completed an updated Southern Resident

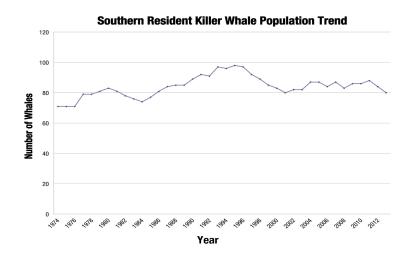
Resident to identify diet.

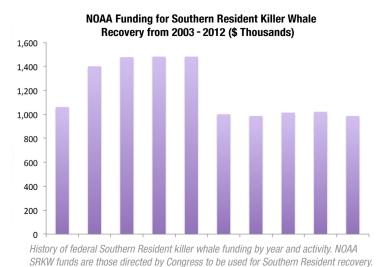
status review.

### **Report Summary**

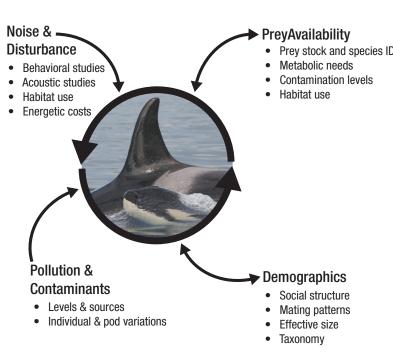
#### Introduction

In the early 2000s, citizens and researchers in Puget Sound were growing increasingly concerned about the health of the local killer whale population following a decline in the 1990s. Despite decades of earlier studies, we were still missing key information on the status and threats to this charismatic population. Do they get enough to eat? Does vessel traffic have an impact on their behavior? Where do they go in the winter? Do they suffer from disease? Answers to these questions were needed to understand what was limiting the population and to plan an effective recovery. In 2003, thanks to Congressional funding, NOAA Fisheries began a research and conservation program to better understand and protect these animals. A few years later, in 2005, the agency listed the population as endangered and finalized a recovery plan in 2008.





### Research to Support Killer Whale Recovery



### **Highlights of the First 10 Years**

Thanks to the first 10 years of this program and collaborations with many partners, we now know:

#### **Southern Residents favor Chinook salmon**

Chinook salmon, also known as King salmon, make up a majority of their diet, especially in the summer when Chinook from the Fraser River in Canada are particularly important. Many runs of Chinook are endangered or threatened, potentially limiting their food source. Ensuring that salmon populations are healthy is an important part of recovery.

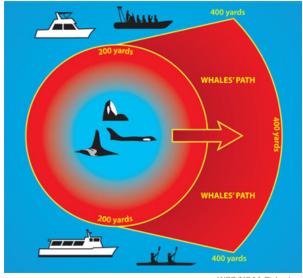
### They are among the most contaminated marine mammals

Southern Resident killer whales have high levels of pollutants in comparison to other fish-eating killer whales, and levels are particularly high in young whales. Pollutants are a concern because they are known to cause disease and reproduction problems in marine mammals.

Movements of satellite-tagged Southern Resident killer whale K25 from 29 December 2012 to 3 April 2013. NWFSC/NOAA Fisheries.

### When vessels are present, they hunt less and travel and vocalize more

Southern Residents spend more time traveling and less time hunting when more vessels are present. This is true for all types of vessels, including kayaks. They also call louder and increase surface behaviors like breaches and tail slaps, which can be energetically costly. Based on this information, we implemented new vessel regulations to reduce behavior and noise impacts to the whales.



WCR/NOAA Fisheries

### In the winter, they forage along the West Coast as far south as Central California

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Using visual observations, acoustic detections, and satellite-linked tags, we discovered that K and L pods spend much of the winter foraging on the outer coast as far south as Central California. J pod seems to spend the winter closer to home in Canadian waters around Vancouver Island and the Olympic Peninsula. They continue to eat salmon in the winter, including Chinook from the Columbia and Sacramento Rivers.

Southern Resident killer whale near a ferry in Puget Sound. NWFSC/NOAA Fisheries.

#### **Education is an important part of recovery**

Working with educational institutions in the region, we have taught thousands about the biology of the whales, the threats they face, and actions people can take to support their recovery.

Southern Resident killer whale with salmon. NWFSC/NOAA Fisheries.

### **Questions That Remain**

We have come a long way in our ability to protect these animals, but many questions remain to guide effective recovery. Future support of this program will enable research and management into these areas:

- How large an effect do high contaminant loads have on whale health and reproduction?
- Do noise and vessels prevent whales from getting enough food?
- Are new vessel regulations successful in reducing impacts?
- Do the whales eat a more diverse diet on the outer coast compared to Puget Sound?
- What habitat is critical to the whales when they are on the outer coast, and what habitat threats do they face?
- How healthy are the animals and what conditions are likely to contribute to disease and mortality?
- How large a population can today's ecosystem support?

### **Looking Ahead**

Ten years of federal effort and collaboration with the killer whale community has secured a strong foundation for recovering this special population, but there is still more work to do. The science team has advanced our knowledge about their biology and the threats they face. Targeted science-based recovery actions like new vessel regulations, oil spill recovery plans, and designation of critical habitat have secured important protections. Yet, to date, the population has not shown strong signs of recovery, likely in part because important factors are beyond our immediate control. We know recovery of these long-lived animals requires commitment and support over decades and across a large geographic area. For more details on the recovery program, please refer to the full report: "Southern Resident Killer Whales: Ten Years of Research and Conservation," available at:

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